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TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT--ETC(U)  
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UNITED STATES ARMY  
ENVIRONMENTAL HYGIENE  
AGENCY

ABERDEEN PROVING GROUND, MD 21010

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TOPICAL HAZARD EVALUATION PROGRAM OF  
CANDIDATE INSECT REPELLENTS AI3-36693a, AI3-36701a, AND AI3-36746a  
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUNDS

OCTOBER 1976 - APRIL 1980

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 75-51-0009-80, 75-51-0011-80, and 75-51-0012-80	2. GOVT ACCESSION NO. <b>AD-A086378</b>	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Topical Hazard Evaluation Program of Candidate Insect Repellents AI3-36693a, AI3-36701a and AI3-36746a, US Department of Agriculture Prop- rietary Compounds, Study Nos. 75-51-0009-80, 75-51- 0011-80, and 75-51-0012-80, October 1976 - April 1980		5. TYPE OF REPORT & PERIOD COVERED  Final, Oct 76 - Apr 80
7. AUTHOR(s)  ALLEN W. SINGER, CPT, VC		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS US Army Environmental Hygiene Agency Aberdeen Proving Ground, MD 21010		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Commander US Army Health Services Command Fort Sam Houston, TX 78234		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE Oct 76 - Apr 80
		13. NUMBER OF PAGES 4
		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) AI3-36693a Skin Irritation AI3-36701a Topical Hazard Evaluation Program AI3-36746a Corneal Injury New Zealand White rabbits Conjunctival Injury		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Preliminary hazard evaluations of AI3-36693a, AI3-36701a, and AI3-36746a were performed by means of laboratory animal studies using New Zealand White rabbits. The technical grade compounds caused moderate corneal and conjunctival injury in all animals, but no skin irritation. Based upon the ocular injuries, it was recommended that all three compounds not be approved for further testing as candidate insect repellents. If, however, any of these compounds provides a significant improvement of pest repellent properties over currently available compounds, it is suggested that they be purified through activated charcoal and resubmitted in their projected use formulation.		

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)



DEPARTMENT OF THE ARMY CPT Singer/jg/AUTOVON  
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY 584-3980  
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-LT-T/WP

17 JUN 1980

SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellents  
AI3-36693a, AI3-36701a, and AI3-36746a, US Department of  
Agriculture Proprietary Compounds, Study Nos. 75-51-0009-80,  
75-51-0011-80, and 75-51-0012-80, October 1976 - April 1980

Executive Secretary  
Armed Forces Pest Management Board  
Forest Glen Section, WRAMC  
Washington, DC 20012

A summary of the pertinent findings and recommendations of the inclosed report follows:

Preliminary hazard evaluations of AI3-36693a, AI3-36701a, and AI3-36746a were performed by means of laboratory animal studies using New Zealand White rabbits. The technical grade compounds caused moderate corneal and conjunctival injury in all animals, but no skin irritation. Based upon the ocular injuries, it was recommended that all three compounds not be approved for further testing as candidate insect repellents. If, however, any of these compounds provides a significant improvement of pest repellent properties over currently available compounds, it is suggested that they be purified through activated charcoal and resubmitted in their projected use formulation.

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DEPARTMENT OF THE ARMY  
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY  
ABERDEEN PROVING GROUND, MARYLAND 21010

TOPICAL HAZARD EVALUATION PROGRAM OF  
CANDIDATE INSECT REPELLENTS AI3-36693a, AI3-36701a, AND AI3-36746a  
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUNDS  
STUDY NOS. 75-51-0009-80, 75-51-0011-80, AND 75-51-0012-80  
OCTOBER 1976 - APRIL 1980

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research Service, Southern Region, Insects Affecting Man Research Laboratory, Gainesville, FL, 21 October 1976.

b. Memorandum of Understanding between the US Army Environmental Hygiene Agency; the US Army Health Services Command; the Department of the Army Office of The Surgeon General; the Armed Forces Pest Control Board; and the US Department of Agriculture, Agricultural Research, Science and Education Administration; titled, Coordination of Biological and Toxicological Testing of Pesticides, effective 23 January 1979.

2. REFERENCE. Toxicology Division Procedural Guide, US Army Environmental Hygiene Agency (USAEHA), 1972, revised 1976.

3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of candidate insect repellents AI3-36693a, AI3-36701a, and AI3-36746a.

4. SUMMARY OF FINDINGS. Hazard evaluations of the candidate repellents AI3-36693a, AI3-36701a, and AI3-36746a, US Department of Agriculture (USDA) Proprietary Compounds, were conducted by this Agency using New Zealand White rabbits for skin and eye studies. A tabular presentation of animal toxicity data developed in this Agency follows:\*†

\* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education and Welfare Publication No. (NIH) 74-23, revised 1978.

† The experiments reported herein were performed in animal facilities fully accredited by the American Association for the Accreditation of Laboratory Animal Care.

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Study Nos. 75-51-0009-80, 75-51-0011-80, and 75-51-0012-80, Oct 76 - Apr 80

TABLE. PRESENTATION OF DATA

Test	Results	Interpretation
<u>SKIN IRRITATION STUDIES</u>		
<u>Rabbits</u>		
Single 24-hour application to intact and abraded skin of New Zealand White rabbits.	None of the compounds caused irritation of the intact skin or of the skin surrounding an abrasion.	USAEHA Category I (ref Appendix)
0.5 mL technical grade compound applied to each of six rabbits.		
<u>EYE IRRITATION STUDIES</u>		
<u>Rabbits</u>		
Single 24-hour application of 0.1 mL technical grade compound to one eye of each of six New Zealand White rabbits.	Compounds AI3-36693a, AI3-36701a, and AI3-36746a caused moderate injury to all corneas, and moderate to severe injury to conjunctival tissues in all rabbits tested. Evidence of injuries persisted at 72 hours but was gone by 7 days.	USAEHA Category E (ref Appendix)

Study Nos. 75-51-0009-80, 75-51-0011-80, and 75-51-0012-80, Oct 76 - Apr 80

5. CONCLUSION. The technical grade compounds AI3-36693a, AI3-36701a, and AI3-36746a caused moderate corneal and conjunctival injuries and do not qualify as nonhazardous candidate repellents.

6. RECOMMENDATION. Under the provisions of the Memorandum of Understanding (paragraph 1b), it is recommended that AI3-36693a, AI3-36701a, and AI3-36746a, USDA Proprietary Compounds, not be approved for further testing as candidate insect repellents. If, however, these compounds represent a significant improvement in pest repellent properties over currently available repellents, it is suggested that they be purified in activated charcoal and resubmitted in their proposed use formulation.



ALLEN W. SINGER  
CPT, VC  
Veterinary Animal Laboratory Officer  
Toxicology Division

APPROVED:



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Chief, Toxicology Division

APPENDIX

TOPICAL HAZARD EVALUATION PROGRAM  
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING  
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation, and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals, prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds noninjurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.



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